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THE ETIOLOGY

AND

INDICATIONS FOR TREATMENT

OF

IRREGULAR UTERINE ACTION DURING LABOR.

BY

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THE ETIOLOGY AND INDICATIONS FOR TREATMENT OF IRREGULAR UTERINE ACTION DURING LABOR.

It seems almost like presumption to invite the attention of the profession anew to a subject apparently so well settled as the causation of irregular uterine action during labor. Under the different titles of rigid os, hour-glass contraction, and the like, they are familiar enough, and our standard authors furnish for each of these conditions severally an accepted explanation.

But there is nothing so firmly established in medical science as to preclude our instituting, from time to time, fresh inquiry as to whether all that is taught as sound doctrine upon any given subject has really a firm foundation in anatomy, physiology, and practical experience.

I must confess to owing much that is satisfactory to my own mind, in connection with the theory of labor, to the teachings of the late Professor Seyfert, of Prague; who, confining himself almost entirely to oral teaching, it is to be regretted has left few permanent memorials of his labors behind. Yet among the obstetricians of the present century none deserve

to rank higher than this comparatively little known successor to the chair of the great Kiwisch. Many things which he taught a few years ago, and which were then regarded as wildly heterodox, have since been accepted as welcome additions to our stock of ideas. His intolerant, dogmatic spirit, his utter lack of fairness toward those who differed from him, together with the absence of any published exposition of his doctrines, have, however, combined to prevent his receiving that acknowledgment to which the originality of his teachings justly entitled him.

To avoid confusion, I propose using in the following discussion the term "labor-pains" in the sense of uterine contractions, a distinction made necessary in our language by the frequency with which we hear it stated that women are having strong "pains," when upon examination we find only a feeble measure of uterine contraction, the word "pains" evidently here signifying nothing more than an unduly severe amount of physical suffering.

As examples of irregular uterine action writers distinguish pains in excess, deficient pains, cramps of the uterus, and the various forms of stricture. Regarding the etiology of these conditions, I would beg to be allowed to express my convictions with a certain degree of positiveness, not with any pretence at infallibility, but simply to define the limits of the discussion. Every busy man will find in the ordinary events of his own practice the sort of evidence best qualified for verifying or disproving the opinions I shall endeavor to maintain.

Notwithstanding the picturesque descriptions that have been given of excessive pains, the question is worth considering whether the uterus ever acts with such an undue degree of energy as *per se* to constitute a pathological condition. In cases of obstruction to the passage of the child, strong pains may indeed become a source of danger, though even here, as was long ago pointed out by the sharpsighted Michaelis, their action is oftentimes beneficial. "Suppose," he says, "they do frequently exceed, in cases of contracted pelvis, the limit consistent with safety, they are not to be looked upon on that account as altogether unnatural, for the difficulty of delivery is here not to be overcome without danger, and in the strong

pains we have in our possession always the least dangerous means of ending the labor."

But, with regard to precipitate labors as a consequence of excessive uterine action, are they not to be regarded with apprehension? Precipitate labors are not very uncommon at Bellevue Hospital. I have never noticed any thing peculiarly unfavorable in their action. Not long ago, on a Sunday, a woman was attending divine service in the chapel of the hospital. She felt the first labor-pain, and hastened at once to the lying-in ward. When she reached the top of the staircase leading to the ward, she was obliged to lie down, and in a moment more the child was born. Both the mother and child did perfectly well. Now, it is difficult to see why this woman was not to be regarded as really highly favored. But, says a recent writer:[1] "The consequences of this state of things are sometimes very serious to the child, for it has been thrown suddenly on the floor, the cord ruptured, and the child much injured." In this harrowing picture the tragic consequences of the rupture of the cord especially affect our sensibilities. "But," he adds, "the dangers to which this unnatural action exposes the mother are even more serious; for prolapsus and inversio uteri, laceration of uterus, vagina, and perinæum, hæmorrhage, syncope from the sudden emptying of the uterus, and subcutaneous emphysema of the head and neck from the violent straining, have been the result." It is hard, in this category of ills, to see how inversion or prolapsus of the uterus is likely to result from its own excessive action; and while the occurrence of laceration is not denied, even in this case there is reason to question the propriety of laying the blame upon the uterus. It is the common experience that, when the expulsive pains are good, the tissues rapidly soften. The last sentence in the paragraph quoted probably furnishes the key to the real source of danger. It is to the violent straining that the accidents enumerated are really attributable. They occur in women who possess an undue degree of reflex irritability, which impels them to excessive use of the diaphragm and abdominal muscles. These cases do

[1] Meadows, "Manual of Midwifery," p. 295. Lindsay & Blakiston, 1872.

not call for bleeding, but for the subcutaneous injection of morphia, or, best of all, the production of complete anæsthesia by chloroform, so as to suspend the action of the voluntary muscles.

Too weak pains are unquestionably oftentimes pathological, but here even we need to discriminate. Under the title of "Symptoms of Primary Weakness of Pains,"[1] Scanzoni describes a condition which surely gives rise to no apprehensions, and, in consequence, should properly find its place not in the pathology, but among the varieties of normal labor. The patient is represented as suffering from obscure disagreeable sensations in the lower abdomen, which rarely rise to the dignity of pains, and which interfere neither with sleeping, eating, nor the due performance of household duties. Yet under their influence the os dilates, the membranes form, and even rupture. "The absence of all febrile movement," says Scanzoni, "and the entire quietude of the woman, would lead a superficial observer to disbelieve that she had been long engaged in labor." Experience teaches us that, in these cases, we do best when we imitate in practice the imbecility of the superficial observer, and treat our patient as though she were precisely what she appears to be, viz., a pregnant woman. Let her eat, drink, and sleep, as usual. Even when the waters have passed away, so long as the uterus remains slack, and does not compress the fœtus, neither mother nor child is endangered. One case I knew where twelve days elapsed between the rupture of the membranes and the birth of a healthy living child. Old practitioners, as a rule in such cases, wisely abide the event undisturbed, but my intercourse with younger men enables me to know how strong the disposition is to lend an ear to the importunities of anxious friends "to do something," and to resort to the by no means indifferent use of oxytocics.

A pathological weakness of pains, i. e., where the weakness is a source of danger to both mother and child, occurs rarely, except as secondary to, or complicated by, other conditions, which first claim our attention.

Among the causes of difficult labor, especial stress is often

[1] "Lehrbuch der Geburtshülfe," 4te Auflage, S. 241.

laid upon strictures of different parts of the uterus. Thus we have in head-presentations, most frequently, stricture of the os externum, in breech cases, stricture of the os internum clasping usually the neck of the child after the passage of the shoulder, and in the third stage of labor the stricture known as hour-glass contraction. These strictures are usually described as though they were due to the isolated action of special circular bands of muscular fibres at the points at which the strictures occur. However, revolutionary as it may seem, there is tolerably good ground for questioning the pretty generally accepted opinion that in the independent action of the circular, oblique, and longitudinal layers of muscular fibres, which may be demonstrated in the pregnant uterus, we have furnished us the key to these forms of abnormal uterine action. The existence of such layers is not of course denied, but their importance has unquestionably been greatly exaggerated by the desire of the anatomist to answer the questions of the obstetrician.

For instance, firstly, the superficial layer, whose fibres run both in a transverse and oblique direction, and which covers the uterus like a hood, possesses in the freshly-delivered uterus an almost membranous thinness, so that it is hardly conceivable how it could have played any very active *rôle* in the expulsion of the ovum.

We have, secondly, an inner layer composed of circular fibres, continuous with the circular fibres of the Fallopian tubes above and those of the vagina below. These fibres are a reminiscence of the early development of both uterus and vagina from the filaments of Müller. At the os externum, and the os internum, they are somewhat more abundant, and constitute the so-called "sphincters" of those localities. Now, it is not probable that these circular fibres possess any more functional importance in the uterus than they do in the vagina, yet I hardly think any one would invoke spasmodic stricture of the vagina proper as a cause of dystocia.

The median layer constitutes the great bulk of the uterine walls, and is composed of longitudinal and transverse fibres, which in place of being arranged in distinct layers, as is the rule in other hollow muscles, form an intricate interlacement,

in the meshes of which are contained the vessels of the organ. It is certainly the contractions of this portion of the muscular walls which exercise during labor the preponderating influence in the expulsion of the contents of the uterus. The longitudinal bundles are partly derived from the lower transverse fibres, and pass downward to become continuous with the longitudinal fibres of the vagina; and, in part, are longitudinal from the beginning, but are closely interwoven with the transverse fibres. As they pass down into the cervix, they gradually diminish in bulk, and there either interweave with the sphincters, or terminate by fine processes in the connective tissue, directly underlying the mucous membrane of the vaginal portion.

The action of a muscle thus constituted would be to exercise concentric pressure upon its contents, and in some measure, perhaps, to withdraw its lower segment up over the body to be expelled. There is strong *a priori* reason to doubt whether the uterus during labor ever contracts except in its totality. The evidence to the contrary in the case of the so-called strictures is more apparent than real. Take, for instance, the stricture of the os externum. The tardy dilatation may be due to such exceptional conditions as cancerous infiltration, firm adhesion of the membranes to the os internum, and, perhaps, to old cicatrices of the cervix. Again, in cases where there is loss of parallelism between the axis of the uterus and the axis of the superior strait, the presenting part may by bearing especially upon the anterior portion of the cervix, and the lower segment of the uterus, exercise so little pressure upon the os that its sphincter long maintains its integrity. But, aside from such instances as these, it is matter for consideration whether all the pretended strictures of the os, instead of being due to spasm, are not dependent upon insufficient uterine action. I do not mean to state that such a supposition will satisfactorily account for all that has been seen by others. It certainly has been true of all the cases that I personally have met with in private and hospital practice. Persons often speak of the pains being strong, but affirm that labor does not progress on account of the resistance offered by a firm catgut-like band at the uterine orifice. I have often

met with this condition, but have failed to ever find it associated with good pains of a markedly expulsive character. The patient usually gives expression to an intense degree of suffering, but intense suffering is the constant accompaniment of weak pains and prolonged labor, where the uterus presses upon or is pressed upon by its contents for any considerable period of time. In the condition under consideration, we would hesitate to forcibly introduce the hand into the uterus, not because of the difficulty of introduction, but because of the danger of laceration. Now, were really good pains associated with this form of rigid os, the same danger would be incurred by pressure from above. Instead of the os arresting the expulsion of the fœtus, it would be torn through in most instances like so much paper. As a matter of fact this does not take place, because, under the influence of strong pains, the os rapidly loses its catgut-like feel, and softening and expansion occur simultaneously. Sometimes the cervix is both thick and hard, so that it has been compared to a band of iron. With more show of reason such a condition has been invoked to account for the retardation of labor. Yet it is difficult to reconcile with this view the facile disappearance of rigidity under the influence of properly directed pressure, as, for instance, when the Barnes dilator is employed in cases calling for the speedy termination of labor. All have occasion at times to notice the speedy dilatation of the rigid os after rupture of the membranes. The following case will serve as an illustration:

Mary Brown, primipara, aged twenty, came up to the lying-in ward of the Bellevue Hospital, at 7 P. M., on the 10th of November. She said that for three or four days she had suffered severe pain in the back and abdomen. On examination the os was found sufficiently dilated to admit one finger. As she had suffered much pain during the night, Dr. Swan, the house-physician in attendance, gave her toward morning ʒ ij of the solution of morphia (U. S. Pharmacopœia), which afforded some relief. As there was no change in the cervix, Dr. Swan applied the warm douche for twenty minutes. The cervix, which before had been soft and supple, expanded somewhat, but now became hard and rigid. This condition remained unchanged during the day. For the pain chloroform

was administered several times, with only temporary relief. At 10 A. M. an hypodermic injection of viij ♏. of Magendie's solution was given. Between 12 M. and 7.30 P. M. thirty-five drops more were administered subcutaneously in three injections. As the patient's sufferings remained unabated I was sent for, and reached the hospital between 8 and 9 o'clock. As I was engaged in making a vaginal examination, the membranes ruptured. In ten minutes' time the cervix, which had all day been about the size of a half-dollar, was fully dilated. In three-quarters of an hour more a child was delivered stillborn, which was partially resuscitated, but its death took place after three hours. Immediately after the birth of the child, the mother sank into a sound sleep. Now, this history appears to have but one interpretation. Owing to a relative surplus of amniotic fluid, and the tense state of the membranes, the concentric pressure exercised upon the ovum was wasted upon the periphery, without giving rise to the formation of a bag of waters. The pains, therefore, proved unavailing and became feebler and feebler. After the use of the douche, the uterus passed into a state of tonic contraction, the condition of the cervix affording an index of the condition of the entire uterus, in much the same way as a furred tongue bespeaks a catarrhal condition of the stomach. The mother suffered constant pain, and the exaggerations of the pains at short intervals might have led one to suppose that she was having severe pains of an expulsive character, which were rendered unavailing by the rigidity of the os. The almost instantaneous relaxation of the cervix, after rupture of the membranes and the advent of true pains, should guard against such an error.

It is to be borne in mind that the dilatation of the cervix is not simply a matter of mechanical distention. In easy labors the cervix undergoes a series of physiological changes not only during labor, but sometimes for hours previous, which are of very great importance. These consist of an hyperæmic condition of the parts, of a serous infiltration separating the muscular fibres from one another, and in an increased secretion of mucus, whereby the cervix becomes softened and yielding. Now, the activity with which these organic changes

occur stand in intimate relation to the activity of the uterine contractions. But this relation is much more marked in primiparæ than in multiparæ. In fact, in multiparæ we sometimes find a complete softening, and a fully dilatable condition of the cervix induced by contractions, which have hardly excited the notice of the woman. In primiparæ, on the contrary, while good pains, under otherwise normal conditions, certainly induce softening of the cervix, weak pains effect no changes in its tissues. Thus we see that pains which may be good enough to accomplish the organic changes in the cervix in multiparæ, may be utterly inadequate for the same purpose in primiparæ. I think it is losing sight of this comparative difference which has led observers so commonly to attribute to the "rigid os" of the primiparæ the blame that properly attaches to the relatively insufficient uterine action.

In the treatment of this affection there is no occasion to resort to bleeding, to tartar-emetic, or to plastering the cervix with belladonna-ointment. In the course of time the tonic contraction generally disappears of itself. But while it lasts the patient's condition is one of acute suffering. To allay this suffering we are frequently called upon to use morphia either by the mouth or hypodermically. Opiates often accomplish wonders in one of two ways. Owing to the prolongation of the labor, and its attendant pain, the patient's nervous energies have become exhausted. The arrest of the pain enables the woman to sleep, and, with the recuperation of power that comes upon awakening, good pains follow which bring the labor to a happy termination. In other cases, after the employment of opium, or the administration of an anæsthetic, the parts apparently relax, and an acceleration of labor follows. Opium, when it produces this effect, has been regarded as an oxytocic. Now, in these cases we have first the arrest of pain, then the occurrence of regular uterine action, and as a consequence the rigid os yields. It is possible that the beneficial effect of the anodyne or anæsthetic is due directly to its quieting action upon the spinal nerves. The uterus derives its motor nerves chiefly from the sympathetic system. When from disease of the spinal cord there is total paralysis of the lower extremities and bladder, labor has been

known to proceed undisturbed.[1] It has been surmised[2] that the nerves of the uterus derived from the cerebro-spinal system possess inhibitory properties. Of course, we are here resorting in part to theory, but, if it be true, it readily explains how severe pain may suspend uterine action, and how the tranquillizing of pain would restore to the motor nerves their full energy.

In cases where anodynes and anæsthetics fail us, we have seen how favorable results may occur from rupture of the membranes.

On some occasions we find, on examination, the cervix partially dilated, a segment of the head presenting, but the cervix continues hard and unyielding. The patient is noisy, and screams out with every pain. Now, in a number of instances, I have had an opportunity to demonstrate in the presence of the members of the hospital staff the speedy disappearance of all rigidity, with complete dilatation, by simply asking the woman to hold her breath, and reënforce the uterine pains by the action of the auxiliary muscles. With my finger upon the cervix I have known a very few pains, thus reinforced, to put an end to a long period of delay and suffering.

In all cases where we desire to quickly overcome rigidity, or where other methods have proved inffectual, we possess a certain means in the use of the Barnes dilator, which acts most beneficially by both the mechanical pressure it exercises on the cervix, and by stimulating the dormant energies of the uterus.

But we cannot proceed further with our subject without laying down some distinction between good pains and those of an opposite character. This is not quite so simple as might at first appear. Good pains have nothing to do with mere frequency, or the suffering of which they are the source.

In every pain we have alternating contraction and relaxation of the uterine muscular fibres. In good pains the excursions thus formed need to possess a certain degree of amplitude. When the excursions are short, and the pains at the

[1] Frankenhauser, "Die Nerven der Gebärmutter," p. 47. June, 1870.

[2] Schroeder, "Lehrbuch der Geburtshülfe," 2te Auflage, S. 99. Frankenhauser, *l. c.*

same time strong, they give rise to clonic uterine contractions. When the excursions are absent, and are replaced by a hardening of the uterus which closely compresses its contents, even in the intervals of the pains, we have the condition to which we have given the name of tonic contraction. Where there is any obstacle to delivery, these conditions may pass by insensible gradations into one another. The transition from weak pains to a state of tonic contraction is common in primiparæ, in cases where, from hydro-amnion, twin-pregnancy, or other causes, the uterus is overdistended, or where, from any reason, the efforts of the uterus are unavailing to expel its contents. Sometimes, following a state of prolonged tonic contraction, after the evacuation of the uterus, its walls collapse like those of a pricked bladder. The stage of exhaustion or paralysis has been reached.

As explanatory of these several conditions we need to bear in mind what is often lost sight of in the earlier stages of labor, that the uterus, in addition to contractility, likewise possesses retractile properties. These are shown in a very marked way by the manner in which the uterus closes upon its contents after the rupture of the membranes; so, too, by the manner in which the uterus follows down the fœtus during the period of expulsion. But even before the rupture of the membranes the same retractile disposition manifests itself. Normally the gradual closure of the uterus upon the ovum leads with a dilated os, to the permanent formation of the bag of waters. When from any reason the cervix does not dilate, as the uterus retracts, the excursions made by the labor-pains shorten, which thus, when strong, assume the clonic form. The same process leads finally to the close investment of the ovum by the uterus, when the only indication of contractility which remains is the increased hardening of the uterus at short intervals. Pains of this kind have lost all their expulsive character. Yet they are not unfrequently described as "good," and the delay attributed to a rigid os. In a similar condition of the uterus, when the head is on the floor of the pelvis, the arrest is oftentimes attributed to a rigid perinæum. But it is a matter of every-day experience that with really good pains the perinæum speedily loses its rigidity. Of course it is not denied that, in

primiparæ, the organic changes which effect the softening of the perinæum need for their accomplishment relatively stronger pains than in multiparæ. The weak pains which are the concomitants of a rigid perinæum are reënforced in some primiparæ by the energetic action of the abdominal muscles. Then if rigidity persists, the perinæum commonly tears instead of impeding labor. To the same retractile properties of the uterus are to be ascribed the irregular pains so common in cross-births, and contracted pelvis.

In somewhat rare cases, after the head has travelled through the cervix, the entire uterus passes into a state of tonic contraction. The fibres which embrace the child's neck may prevent the advance of the shoulders. We then have what is termed stricture of the os internum. It is not due to the spasm of any special bundle of circular fibres, but the uterus, as it retracts upon its contents, becomes conformed to the irregularities of the fœtus. The small size of the child's neck permits a more complete retraction of the muscular fibres at that point. This anomaly occurs, however, much more frequently in pelvic births after the passage of the shoulders. In head-presentations we should not use forceps, nor in breech-deliveries should we resort to forcible attempts at extraction. In either case the indication is to excite expulsive pains, and this is best fulfilled by kneading and compressing the uterus, seeking thus by a *vis-a-tergo* to overcome the constriction.

After labor is completed, the tonic contraction, or, more properly, retraction of the uterus, is the safeguard Nature sets up against hæmorrhage. As a result of the abuse of ergot, or, in other cases, from an abnormal adherence of the placenta, the stage of tonic contraction may be reached before the expulsion of the placenta. A somewhat exaggerated form of this condition produces the familiar hour-glass contraction. In the body of the uterus complete retraction is prevented by the presence of the placental mass. Near the os internum, as there is no obstacle to the retraction of the muscular fibres, a constriction results; while below, the cervix, as is usual following confinement, has a funnel-shape, and hangs loosely in the vagina. In general terms, then, the hour-glass form may be said to be due to tonic retraction of the uterus proper com-

bined with a sub-paralytic condition of the cervix. Usually following confinement the tonic condition is at first intermittent, and followed by periods of relaxation. In hour-glass contraction the tonicity is for a long time persistent. As hæmorrhage is rare, we await the final relaxation of the uterus and expulsion of the placenta, which is accomplished by the recurrence of pains of a normal character.

It is not, however, altogether safe to leave our patient before this termination has been reached, for, exceptionally, the muscular fibres of the body of the uterus may relax prior to those of the lower segment, and thus hæmorrhage may result. Injections of ice-cold water in such cases not only restrain the hæmorrhage, but induce oftentimes a regular expulsive uterine action. So soon as a portion of the placenta can be reached by the fingers introduced into the vagina, we may hope by gentle manipulations to gradually effect its removal. I am now convinced that rarely if ever are we called upon to deliver the placenta in hour-glass contraction by force.

In most of the abnormal conditions heretofore mentioned we have called attention to the coexistence of excessive pain, and have noticed the connection between intolerable pain and long-continued reciprocal pressure between the uterus and its contents.

But acute suffering sometimes attends upon the preliminary stages of labor. In the latter days of pregnancy in the primipara, and for a few hours preceding the advent of true labor-pains in multiparæ, contractions occur, which normally scarcely attract the attention of the patient. In rare instances, however, the suffering they occasion is intense. Hysterical women suffer in this way, from pains, which would not be noticed by others, and for their relief it becomes necessary to resort to such palliatives as warm baths, opium, and chloroform in small doses.

But even where hysteria does not exist as a cause, the pains may be so severe, while the cervix has still its normal length, that the woman believes herself in labor, and, indeed, the contractions are really as painful as in actual labor. There are no febrile symptoms indicative of an inflammatory condition of the uterus and its appendages. The pain is like

that in the rheumatism of a muscle. Though the term rheumatism of the uterus is applied to this condition, its pathology is uncertain. Indeed, in reading the ordinary descriptions given of it, it is hard to resist the conclusion that the writers have confounded together a number of distinct affections, such as hysterical hyperæsthesia, intestinal irritability, and early stages of inflammation. Seyfert declares it to be due to deficient elasticity of the peritoneal covering of the uterus, resulting from preëxisting peritoneal inflammation. Practically important is the disappearance of these pains upon the induction of intense diaphoresis. We have seen patients, who have been treated for days by hypodermic injections of morphia, with only moderate results, relieved as if by magic, by placing them in a warm bath, and then covering them with blankets, giving in addition hot drinks and Dover's powder, until they became bathed in abundant perspiration.

It is often difficult, toward the close of pregnancy, to distinguish between the colic pains due to fecal accumulation, or the presence of gases in the stomach and intestines, troubles to which pregnant women are especially disposed, and uterine contractions of a painful character. Indeed, in the former case the uterus becomes involved to some extent, so that the cervix is often felt, during one of these cramps, to simultaneously harden. Moreover, after labor has actually begun, it may become complicated by colic-pains, which exercise in turn a suspensive influence upon parturition. But the colic-pains are themselves intermittent, and are, therefore, liable to be mistaken for labor-pains. Thus we may become involved in perplexities which time alone can solve. Even when we have made out our diagnosis of "false labor-pains," and give an opiate for the relief of our patient, we never can be quite sure that the first result of quieting the pain may not prove the acceleration of labor. Where this does not occur, we should guard against the return of the trouble by clearing out the bowels either by purgatives or enemata.

In normal labors the pulse becomes more rapid at the beginning of each pain, and continues to increase in frequency until the pain has reached its acme, when a gradual declination follows. But sometimes labor is attended by marked

febrile symptoms. There exists not only rapidity of pulse during the intervals of the pains, but a continuous elevation of temperature. Now, if at the same time the uterine contractions are the source of extraordinary suffering, there is strong reason for suspecting that the labor is complicated by inflammatory conditions of the organs concerned in parturition. Thus a latent pelvi-peritonitis may be converted into the acute form by the several acts which comprise an ordinary labor, or the prolonged tonic contraction of the uterus upon the fœtus after the rupture of the membranes, especially in neglected shoulder presentations and in contracted pelves, may give rise to inflammatory conditions of the uterus itself. In either case the association of febrile symptoms with intense pain should awaken serious apprehension. Especially ought we to be forewarned against the indulgence of a sense of false security, because of the treacherous lull in the symptoms that, as a rule, takes place when the labor is at an end. After a day or two we may expect a chill and the return of the fever. In these early stages of metritic and pelvi-metritic trouble there is little question as to the value of mild purgatives. A ten-grain dose of calomel has oftentimes a most beneficent action in arresting the disease. Where the advance of labor renders the induction of artificial diarrhœa impracticable, opiate clysters, though of inferior value, soothe the pain and are our next most valuable resource.

And now to recur once more to the subject of weak pains. In all cases the strength of the pains must be proportioned to the obstacles to be overcome. Only then are they to be regarded as too weak when they prove inadequate to accomplish delivery without detriment either to the mother, to the child, or to both.

Previous to the rupture of the membranes the existence of weakness of pains can hardly be determined. Only after rupture are we in a condition to recognize the presence of primary weakness. Primary weakness becomes dangerous when the uterus, instead of exercising expulsive action, retracts upon its contents so as to closely invest the fœtus. In such a case the child's life is compromised both by pressure and by interference with the utero-placental circulation.

Secondary weakness results where an obstacle exists which the pains prove ineffectual to overcome. As in primary weakness, this condition may be attended with risk to the life of the child, and with suffering to the mother.

In these cases, unless relief is afforded by art, there is the special danger that the long continuance of the pressure may lead to inflammatory troubles, which will influence unfavorably the puerperal state.

Lastly, the prolonged retraction of the uterus may be followed by the entire cessation of the pains, and thus paralysis result. Uterine retractility is not precisely the same force as that which causes the expulsion of a fluid from an over-distended elastic bladder, for retractility and contractility are in the uterus rarely disassociated from one another. When the uterus ceases to contract, it forfeits, in the rule, its retractile properties likewise.[1]

In the treatment of a pathological weakness of pains we have one of two courses open to us. We may either effect delivery by resorting to a judiciously-selected operative procedure, or, by applying the whip and the spur, we may seek to compel the uterus to perform its proper functions. Both from training and inclination, I prefer in most, if not all cases, to adopt the first alternative. Yet I am not quite ready to deny that ergot may be profitably employed for primary weakness, at even an early stage of labor. The efficacy of uterine action is more nearly related to the innervation than to the muscular development of the organ. In cases of defective nervous power, ergot perhaps may have a wider application as a remedy than is at present assigned to it. Most that has been written regarding its use relates to its administration in large doses. I desire here simply to mention the fact that I have seen small doses of ergotine given in the Prague Hospital with the view to awaken such a degree of uterine activity as would suffice to bring about the moulding of the head in a moderately-contracted pelvis.[2] The ordinary formula consisted of—

[1] *Vide* Breisky, "Ueber die Behandlung der puerperalen Blutungen." (Volkmann's Sammlung klinische Vorträge, No. 14, p. 92.)

[2] Summer, 1865.

℞. Ergotine ℈j.
Tinctura cinnamomi et syr. simpl. āā ℥j.
M. et sig. Teaspoonful every three or four hours.

In these doses it appeared to produce good results, and certainly did no harm, unless, perhaps, by leading to the postponement of a more vigorous line of treatment.

Some mention ought perhaps to be made here of a plan for supplementing weak pains that has been long employed by practitioners, but for which the rules have been more recently formulated by Kristeller, consisting of regulated pressure made through the abdominal walls upon the fundus uteri. This method, to which Kristeller has given the name of *expressio fœtus*, in some cases enables us to bring about delivery without the employment of an extractive force. Yet the number of such cases is limited, and its principal application will always, it is likely, be found as a support to other operative procedures belonging to midwifery. Those who are not accustomed to resort to this plan will be astonished, upon trial, to find how much a scientifically-applied *vis-a-tergo* facilitates forceps-deliveries, and extraction following versions.

In conclusion, I have only to add that, while I, of course, expect that many recollections will occur to members of this Society which seem at variance with some of the views here presented, I feel at the same time confident that, if, in future, they carry the principles I have enunciated with them to the bedside, they will find them in close accordance with sober, careful observation.